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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,722	08/07/2001	Koichi Abe	8373.253US01	1116

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EXAMINER

COLAIANNI, MICHAEL

ART UNIT PAPER NUMBER

1731

DATE MAILED: 12/19/2002

2

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/923,722

Applicant(s)

Abe

Examiner
Michael Colaianni

Art Unit
1731



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Aug 7, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above, claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

Art Unit: 1731

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-12, drawn to the process, classified in class 65, subclass 105.
 - II. Claim 13, drawn to the article, classified in class 428, subclass 64.1.
2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process, such as scoring.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Curtis Hamre on May 30, 2002 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claim 13 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Art Unit: 1731

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-3, 4-6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. 4999083 in view of Allaire et al. 6327875 and Davis et al. 5809006.

Watanabe et al. teach a process for scoring glass sheets to form grooves by using an ion beam to change the crystalline nature of the glass to an amorphous material and then selectively etching the amorphous material to form a groove in the glass (col. 3-4, lines 62-68, 1-5, col. 6, lines 40-52). Watanabe's teaching of changing the crystal structure of the glass to an amorphous structure necessarily requires that the specific volume of the glass would increase because, by

Art Unit: 1731

definition, an amorphous structure is less "well packed" than an crystal structure and thus would take up more volume. Watanabe also teaches the temperature is below the melt temperature because if it was above the melt temperature, the glass material would simply be cut in two and not merely have a change in crystal structure as taught by Watanabe (col. 3-4, lines 62-68, 1-5). Moreover, Watanabe obviously teaches cooling the glass after heating because if the glass was not cooled after heating it the amorphous structure would not form, but rather the crystalline structure would form under the slow cooling conditions.

However, Watanabe does not teach breaking the glass sheet along the groove; using a laser; forced cooling immediately after heating; using air as the coolant; using two lasers to heat the glass; the depth of the groove being at least 50 microns; or the glass having a thermal expansion coefficient claimed in claim 9.

However, Allaire teaches that it known to use a laser technique to form the groove in glass and then break the glass along the groove (col. 5, lines 8-13).

Allaire also teaches that the glass is cooled immediately after laser treatment (col. 3, lines 61-68). While Allaire teaches using a fluid coolant, it is known in the art to substitute air for water and vice versa. Accordingly it would have been obvious to substitute one cooling fluid for another.

Allaire also teaches that the grooves formed have a depth of 115 to 118 micrometers (col. 2, lines 23-25).

Art Unit: 1731

Davis et al. teach that is known that an ion beam and a laser are equivalents and may be freely substituted one for another (col. 1, lines 59-62). Thus substituting an ion beam for a laser in Watanabe's method would have been obvious.

Moreover, using two lasers instead of one would have been obvious because doing so would provide a quicker heating mechanism to form the crack. Also using a glass having the claimed thermal expansion coefficient would have been an obvious design choice because the degree of thermal expansion would have to be controlled due to the heating with the laser. If the thermal expansion is too low the heating would cause the entire panel to shatter.

It would have been prima facie obvious at the time the invention was made to substitute Allaire's and Davis et al.'s well known teachings with Watanabe et al.'s method of cutting a glass sheet because doing so would permit a final glass sheet to be formed into the desired shape by breaking it from the rest of the sheet. Also, by cooling immediately after heating, the amorphous structure is certain to form and provide for easy etching and separation.

8. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. 4999083 in view of Allaire et al. 6327875, Davis et al. 5809006 and JP 63-40734.

Watanabe et al. in view of Allaire et al. and Davis et al. teach applicant's claimed invention. See the §103(a) rejection for Watanabe in view of Allaire and Davis' teachings. However, Watanabe in view of Allaire and Davis do not teach using ammonium fluoride as the etchant or using a mixture of ammonium fluoride and sulfuric acid as the etchant.

Art Unit: 1731

However, JP 63-40734 teaches that it is well known to use an ammonium fluoride solution as an etchant (abstract). Moreover, Watanabe et al. teach that the etchant used will depend on the type of glass and a number of other variables, but can be easily selected for its suitable purpose (col. 4, lines 24-28).

It would have been prima facie obvious at the time the invention was made to combine JP 63-40734's teachings with Watanabe et al. in view of Allaire et al.'s method of cutting glass for the reasons given in the body of the rejection.

9. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. 4999083 in view of Allaire et al. 6327875, Davis et al. 5809006 and Nishikawa et al. 5138131.

Watanabe et al. in view of Allaire et al. and Davis teach applicant's claimed invention. See the §103(a) rejection for Watanabe in view of Allaire and Davis' teachings. However, Watanabe in view of Allaire and Davis do not teach the cutting is a true circle or a closed curve.

However, Nishikawa et al. teach forming a closed curve, especially in a circular shape by using a laser (Fig. 3).

It would have been prima facie obvious at the time the invention was made to combine Nishikawa et al.'s teachings with Watanabe et al. in view of Allaire et al. and Davis et al.'s method of cutting glass because doing so would permit a many different shapes and designs to be formed by the laser cutting method thereby increasing the versatility of the method.

Art Unit: 1731

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. 4999083 in view of Allaire et al. 6327875, Davis et al. 5809006, Nishikawa et al. 5138131 and Hafner 3453097.

Watanabe et al. in view of Allaire et al., Davis et al. and Nishikawa et al. teach applicant's claimed invention. See the §103(a) rejection for Watanabe in view of Allaire's, Davis' and Nishikawa's teachings. However, Watanabe in view of Allaire, Davis and Nishikawa do not teach the laser is applied at angle to the normal.

However, Hafner teaches that it is known to apply the laser during the cutting operation at an angle to the normal (Fig. 1, ref. no. 27, 13).

It would have been prima facie obvious at the time the invention was made to combine Hafner's teachings with Watanabe et al. in view of Allaire et al., Davis et al. and Nishikawa's method of cutting glass because doing so would permit a many different shapes and designs to be formed by the laser cutting method thereby increasing the versatility of the method.

Conclusion

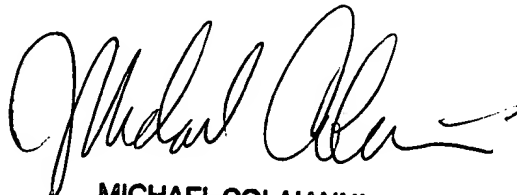
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Colaianni whose telephone number is 703-305-5493. The examiner can normally be reached on Monday to Friday from 8:00 AM to 4:30 PM.

Art Unit: 1731

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin, can be reached on (703) 308-1164. The fax phone number for the organization where this application or proceeding is assigned is 703-305-7115.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

Art Unit 1731
December 14, 2002



MICHAEL COLAIANNI
PRIMARY EXAMINER